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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,073	12/29/2000	Joun Ho Lee	8733.376.00	6225

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EXAMINER

RUDE, TIMOTHY L

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Am

Office Action Summary	Application No. 09/750,073	Applicant(s) LEE ET AL.	
	Examiner Timothy L Rude	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13,15-17 and 22-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13,15-17 and 22-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

1. Claims 14 and 18-21 are canceled without prejudice. Claims 22-51 are added.

Claims 1 and 15-17 are amended necessitating new grounds of rejection.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-13, 15-17, and 22-51 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-49 of U.S. Patent No. 6,356,335. Although the conflicting claims are not identical, they are not patentably distinct from each other because the substantially claim dielectric structures of various shapes with or without the use of electric field inducing windows to provide stable arrangement of liquid crystal molecules in a multi-domain LCD.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7, 10, 11, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koma, USPAT 5,608,556 in view of Matsuyama et al (Matsuyama) USPAT 6,081,315.

As to claims 1, 10, and 22, Koma discloses in Figures 3-7, (First embodiment, col. 5, line 21 through col. 7, line 67) a multi-domain liquid crystal display device comprising: a first substrate, 10, defined by a plurality of pixel regions; an orientation control electrode, 22, (Applicant's common auxiliary electrode) (col. 6, lines 5-8) around each pixel region on the first substrate; an orientation control window, 33a, filled with orientation film material, 34, (Applicant's dielectric structure) (col. 6, lines 28-34) (running from lower left to upper right) on a second substrate, 30, the dielectric structure dividing each pixel region into a plurality of domains (lower right domain from upper left domain); an additional structure (portion of 34 in 33a running from upper left to lower right) compensating electric field around a corner portion within each pixel region; and a liquid crystal layer, 41, between the first substrate and the second substrate.

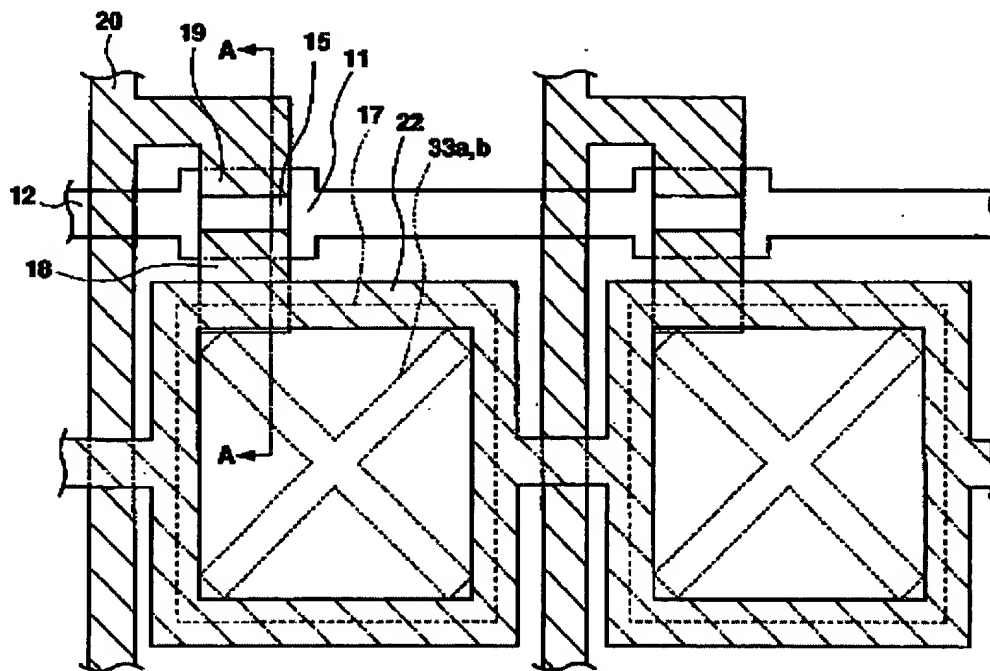


Fig. 3

Koma does not explicitly disclose at least one or more additional structures formed at an end portion of the dielectric structure within the pixel region.

Matsuyama teaches as prior art in Figures 3 and 5 an aperture, 12, (Applicant's dielectric structure) with Y shaped additional structures formed on both end portions of the dielectric structure within the pixel region to divide the pixel region into regions of different orientations that compensate each other to improve image quality (col. 1, lines 18-21).

Matsuyama is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add at least one or more additional structures formed at an end portion of the dielectric structure within the pixel region to

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divide the pixel region into regions of different orientations that compensate each other to improve image quality.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Koma with the at least one or more additional structures formed at an end portion of the dielectric structure within the pixel region of Matsuyama to divide the pixel region into regions of different orientations that compensate each other to improve image quality.

As to claim 2, Koma discloses in Figures 3-7, (First embodiment, col. 5, line 21 through col. 7, line 67) the multi-domain liquid crystal display device of claim 1, further comprising: a plurality of gate lines, 12, on the first substrate in a first direction; a plurality of drain lines, 20, (Applicant's data lines) formed in a second direction to cross the first direction; thin film transistors (col. 5, lines 27-31) formed in a portion where the gate lines cross the data lines; and a display electrode, 17, (Applicant's pixel electrode) connected with the thin film transistors in the pixel region defined by the gate lines and the data lines.

As to claim 3, Koma discloses in Figures 3-7, (First embodiment, col. 5, line 21 through col. 7, line 67) the multi-domain liquid crystal display device of claim 1, further comprising an orientation film, 23 and 34, (Applicant's alignment film) on the first substrate and the second substrate, respectively.

As to claim 4, the recitation “the common auxiliary electrode is formed with the gate lines” is a process recitation. No structural limitations are present in claim 4.

The device of Koma, therefore, anticipates all relevant recitations of claim 4.

As to claim 5, Koma discloses in Figures 3-7, (First embodiment, col. 5, line 21 through col. 7, line 67) the multi-domain liquid crystal display device of claim 1, wherein the orientation control electrode, 22, (Applicant’s common auxiliary electrode) is not formed with the gate electrode, 11, (Applicant’s gate lines) (on different layers per Figure 4, see also col. 5, lines 42-46).

As to claim 6, Koma discloses in Figures 3-7, (First embodiment, col. 5, line 21 through col. 7, line 67) the multi-domain liquid crystal display device of claim 1, wherein liquid crystal molecules within each domain have different alignment directions (Figure 6 and col. 6 line 66 through col. 7, line 8).

As to claim 7, Koma discloses in Figures 3-7, (First embodiment, col. 5, line 21 through col. 7, line 67) the multi-domain liquid crystal display device of claim 1, wherein the dielectric structure includes a first orientation control window, 33a, filled with orientation film material, 34, (Applicant’s dielectric structure) (col. 6, lines 28-34) (running from lower left to upper right) on a second substrate, 30, and a second and third structure regions (portions of 34 in 33a running from middle to lower right and running from middle to upper left).

As to claim 11, Koma discloses the multi-domain liquid crystal display device of claim 1.

Koma does not explicitly disclose a phase difference film on at least one of the first and second substrates.

Matsuyama teaches the use of optical compensation films (Applicant's phase difference film) in Figure 1 (col. 5, lines 18-27) to compensate the vertical orientation mode.

Matsuyama is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add optical compensation films to compensate the vertical orientation mode of the liquid crystal layer.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Koma with the optical compensation films of Matsuyama.

4. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koma in view of Matsuyama, as applied to claim 1 above, in view of Ohmuro et al (Ohmuro) USPAT 2001/0043,305 A1

As to claims 8 and 9, Koma and Matsuyama discloses the multi-domain liquid crystal display device of claim 1.

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Koma and Matsuyama does not explicitly disclose a device wherein the dielectric structure includes an electric field induction window.

Ohmuro teaches the use of cavities, 62, (Applicant's field induction window) formed as holes or slits in the glass substrate (per Figures 4-6), only in regions where abnormal domains tend to occur, to suppress occurrence of disclinations [0062 and 0063].

Ohmuro is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add cavities (Applicant's field induction window) formed in the glass substrate, only in regions where abnormal domains tend to occur, to suppress occurrence of disclinations.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Koma and Matsuyama with the cavities of Ohmuro to suppress occurrence of disclinations.

Allowable Subject Matter

5. Claims 12, 13, 15-17, and 23-51 would be allowable if the double patenting rejection set forth in this Office action is overcome.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 12, relevant prior art of record did not disclose, alone or in combination, a multi-domain liquid crystal display device comprising: first and second

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substrates; a plurality of gate lines on the first substrate in a first direction; a plurality of data lines formed in a second direction to cross the first direction; a plurality of thin film transistors formed in a portion where the gate lines cross the data lines; a plurality of pixel regions between neighboring gate and data lines; a common auxiliary electrode around each pixel region; a plurality of pixel electrodes formed in each pixel region to connect with the thin film transistors; a dielectric structure on the second substrate, *the dielectric structure being applied electric field with the common auxiliary electrode and being divided the pixel region into at least four domains; at least one or more additional structures formed at an end portion of the dielectric structure within the pixel region*; an alignment film on at least one of the first substrate and the second substrate; and a liquid crystal layer between the first substrate and the second substrate.

As to claims 13 and 15-17, they are dependent upon claim 12 with allowable subject matter above.

As to claim 23, relevant prior art of record did not disclose, alone or in combination, a multi-domain liquid crystal display device as claimed, comprising: *a common auxiliary electrode around each respective pixel region; a dielectric structure in at least one of the pixel regions, the dielectric structure having two end portions and a middle portion, the end portions each having a U shape with an apex, the apexes connected to one another by the middle portion*. The closest combination is Koma in view of Matsuyama, but they do not disclose the claimed structure.

As to claim 36, relevant prior art of record did not disclose, alone or in combination, a multi-domain liquid crystal display device as claimed, comprising: *a common auxiliary electrode around each respective pixel region; at least one electric field induction window in a corner portion of at least one of the pixel regions.* The closest combination is Koma in view of Matsuyama, but they do not disclose the claimed structure.

As to claim 41, relevant prior art of record did not disclose, alone or in combination, a multi-domain liquid crystal display device as claimed, comprising: *at least one of the pixel regions including three subregions; a common auxiliary electrode within each subregion, the common auxiliary electrode having a hexagonal shape; a thin film transistor in each of the pixel regions.* The closest combination is Koma in view of Matsuyama, but they do not disclose the claimed structure.

As to claims 24-35, 37-40, and 42-51, they are directly or indirectly dependent upon claims with allowable subject matter above.

Response to Arguments

6. Applicant's arguments with respect to claims 1-13 and 15-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.



TLR
November 4, 2002

Timothy L Rude
Examiner
Art Unit 2871



TOANTON
PRIMARY EXAMINER